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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/826,686

04/05/2001

Lee-Fang Wei

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09/24/2004

LUCENT TECHNOLOGIES INC.

DOCKET ADMINISTRATOR

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HOLMDEL, NJ 07733

EXAMINER

LUGO, DAVID B

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/826,686	Applicant(s) WEI, LEE-FANG	
	Examiner David B. Lugo	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 20-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-13 and 19 is/are rejected.
- 7) ☒ Claim(s) 3-6 and 14-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/5/1, 5/20/2, 7/3/2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-19, drawn to a transmitter process and corresponding transmitter using precoding, classified in class 375, subclass 296.
 - II. Claims 20-28, drawn to a transceiver and corresponding process for reducing downstream transmission power in response to an echo level, classified in class 379, subclass 406.01.
 - III. Claims 29-32, drawn to a receiver comprising a Viterbi decoder for processing received signals, classified in class 375, subclass 341.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I-III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, each invention has separate utility, such as the precoding scheme of invention I, or the receiver of invention III, being used in a system where the transmission power reducing scheme of invention II is not utilized. For instance, it is stated in page 14, lines 20-24 that in some embodiments of the system echo levels may be reduced to lower quantization noise, inferring that in other embodiments, such a technique is not used. Further, the receiver of invention III may be used in a system where a signal transmitted is one produced from a prior art precoding scheme, and not a signal transmitted in accordance with the precoding scheme of invention I. See MPEP § 806.05(d).

Art Unit: 2637

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with John McCabe on 9/3/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 20-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

5. The drawings are objected to because text labels should be used to indicate the various components in Figures 1, 2 and 10 (i.e. Fig. 1: user transceiver 12, near-end central office 14, far-end transceiver 16, analog channel 20, digital network 22; Fig. 2: trellis encoder 28, amplifier 32, PCM vocoder 34, hybrid 36, Viterbi decoder 38, modulo device 46; Fig. 10: PCM vocoder 34', hybrid 36, encoder 110, decoder 114).

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 50 (Fig. 1).

7. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to

Art Unit: 2637

obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

8. Claims 3-6 and 8 are objected to because of the following informalities:
- a. Claim 3, lines 3-4, "in response to precompensated signal point" should be --in response to the precompensated signal point--.
 - b. Claim 8, line 2, "D/C converter" should be --A/D converter--.
- Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 7-9 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Eyuboglu et al. U.S. Patent 6,198,776 and ITU-T G.711 Recommendation.
11. Regarding claims 1 and 9, Eyuboglu et al. disclose a transmitter 112 in Figure 9 for transmitting data to an A/D converter 130 via an analog channel 113 comprising a precoder 122 configured to generate a sequence of output signals $x(n)$ by precoding a sequence of input signal points $u(n)$ to precompensate for ISI in the analog channel (see col. 8, lines 33-40) and being characterized by an original constellation and an extended constellation $y(n)$, a transmit

Art Unit: 2637

constellation being shown in Figure 12, where not all points are quantization levels of the μ -law A/D converter 130 (col. 8, lines 54-58), at least one of the output signals would be distorted by ISI to a signal representative of a signal point lying between quantization levels of μ -law A/D converter 130 if the precoding matches the ISI (i.e. y_0, y_2, y_7, y_9), others of the output signals would be distorted by the ISI to signals representative of signal points that are quantization levels of the A/D converter if the precoding matches the ISI (i.e. y_1, y_3-y_6, y_8), where a majority of the input signal points are quantization levels of the A/D converter, such quantization values shown in column 7, pages 5-6, of the ITU G.711 Recommendation.

12. Regarding claims 7 and 19, the extended constellation includes a plurality of signal point values that are not equal to quantization levels of the A/D converter (Fig. 12 – y_0, y_2).

13. Regarding claim 8, the input signal points $u(n)$ are mapped to an equivalence class corresponding to quantization levels of the A/D converter (col. 8, lines 33-40).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 2 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu et al. in view of Rabipour et al. U.S. Patent 6,363,339.

16. Regarding claims 2 and 10, Eyuboglu et al. disclose a transmitter for transmitting data to an A/D converter as described above, but does not disclose the use of a PCM vocoder.

Art Unit: 2637

17. Rabipour et al. disclose that vocoders are used to encode digitized voice signals, digitized through quantization techniques including PCM (col. 1, lines 29-35).

18. It would have been obvious to one of ordinary skill in the art to use a PCM vocoder to quantize transmitted signals in the system of Eyuboglu et al., in order to enable compressed transmission of digitized voice signals over the network.

19. Regarding claims 11-13, Eyuboglu et al. further disclose that trellis encoders may be used to provide the input signals to the precoder used to produce signal points representative of the quantizer (col. 12, lines 52-53; col. 6, line 60 to col. 7, line 6), and where the prefilter is later used to precompensate for ISI in the channel (col. 10, lines 10-32).

Allowable Subject Matter

20. Claims 3-6 and 14-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and amended to overcome any objections raised in this Office action.

21. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose that the precoding includes adding a modulo amount to precompensated signal points in response to the precompensated signal point having a value outside of a threshold range as recited in claim 3, or that the precoder comprises a digital filter to generate feedback signal points from precompensated signal points, an adder to combine the feedback signal and associated input signal points, and a modulo device to produce a signal within a threshold range from a signal point received from the adder, as recited in claim 14.

Art Unit: 2637

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David B. Lugo** whose telephone number is **(571) 272-3043**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Jay Patel**, can be reached at **(571) 272-2988**.

Any response to this action should be mailed to:


Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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9/17/04


KHAI TRAN
PRIMARY EXAMINER 9/21/04